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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/772,699

02/05/2004

Leroy M. Edwards

8540G-000156

5123

27572 7590 12/11/2008
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EXAMINER

WALKER, KEITH D

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

12/11/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/772,699	Applicant(s) EDWARDS ET AL.	
	Examiner KEITH WALKER	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7,9-18 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7,9-18 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/3/08 has been entered.

Response to Amendment

Claims 1-5, 7, 9-18 and 20 are pending examination as discussed below.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 4 & 5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Regarding claim 4, the limitation "the enclosure surrounds a coolant reservoir and the hydrogen vent is located within a wall of the coolant reservoir" is not supported by the instant specification in such a manner that would enable one skilled in the art to

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make the invention. The parent claim 1, the enclosure already has a hydrogen vent and for the enclosure, as claimed, to have the same hydrogen vent as the coolant reservoir they two would have to be the same or share a common wall and neither of these are described or supported by the instant specification.

As figure 3 shows two enclosures, a coolant reservoir and three hydrogen vents, the claim will be interpreted as the coolant reservoir having a third hydrogen vent.

Claims depending from claims rejected under 35 USC 112, first paragraph are also rejected for the same.

2. Claims 12-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Regarding claim 12, the limitation "the enclosure is a coolant flow path configured to conduct a liquid coolant through the fuel cell" is not supported by the instant specification in such a manner that would enable one skilled in the art to make the invention. The parent claim 11 has the enclosure around the fuel cell stack which captures hydrogen. The instant specification does not teach or suggest the enclosure being a coolant flow path.

As best understood, the claim will be interpreted to mean the enclosure surrounds a coolant flow path configured to conduct a liquid coolant through the fuel cell, as shown in figure 3.

Claims depending from claims rejected under 35 USC 112, first paragraph are also rejected for the same.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4, 7, 9, 11, 12, 16 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0118881 (Walsh) in view of US 2002/0114984 (Edlund).

Walsh teaches a fuel cell comprising a hydrogen flow path that feeds the anode and coolant flow path that cools the fuel cell (Fig. 3, [0036]). The coolant reservoir has a vent in the wall configured to vent hydrogen and other gases present in the reservoir. The vent prevents the buildup of combustible gases and therefore the vent is configured to maintain the hydrogen concentration below 4 percent, since any amount would be an accumulation of combustible gases ([0037]). A water trap is a second enclosure that encompasses both the coolant flow path and the hydrogen flow path.

Walsh is silent to the water trap having a hydrogen vent. However, Walsh does teach that the anode exhaust contains combustible gases and a water tank is used to prevent the combustible gases going into the water tank. Walsh also teaches using a vent to prevent the buildup of combustible gases in water tanks.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the water trap taught by Walsh with a vent that vents hydrogen and other gases to keep the threat of explosions down in the water trap ([0037]).

Walsh is silent to an enclosure encompassing a coolant reservoir.

Edlund teaches a fuel cell system as a power supply for energy consuming devices ([0064]). A housing that encompasses the whole fuel cell system is taught (Fig. 11; [0062-0063]). The housing allows the fuel cell system to be easily integrated as one component into other devices such as vehicles, dwellings or self-contained equipment ([0064]).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the fuel cell system of Walsh with the enclosure of Edlund in order to allow easy integration with energy dependent devices. Furthermore, it would be obvious to one skilled in the art to include a hydrogen vent in the enclosure taught by Edlund so a buildup of combustible gases does not occur and create an explosive situation within the enclosure, as taught by Walsh.

4. Claims 1, 2, 4, 7, 9, 11, 12, 16 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0118881 (Walsh) in view of US 2002/0114984 (Edlund) and US 5,623,390 (Noda).

The teachings of Walsh and Edlund as discussed above are incorporated herein.

While Walsh teaches venting to prevent a buildup of explosive gases, which would include a buildup of hydrogen below a concentration of 4 percent and 1 percent. However, Walsh is silent to the explicit levels of hydrogen being kept below 4 percent and 1 percent.

Noda teaches an electrochemical device that expels hydrogen and is surrounded by an enclosure. The build up of hydrogen gas within the enclosure becomes unsafe due to the explosive nature of hydrogen. Therefore, hydrogen vents are used to pass the hydrogen gas out of the battery and then out of the enclosure. The concentration of hydrogen gas is kept to below 4 percent and preferable below 3 percent to prevent the enclosure from reaching an explosive concentration of hydrogen (9:5-25). Claims that differ from the prior art only by slightly different ranges are prima facie obvious without a showing that the claimed range achieves unexpected results relative to the prior art. (MPEP 2144.05) Discovery of optimum ranges of a result effective variable in a known process is ordinarily within the skill of art and selection of the optimum ranges within the general condition is obvious. (MPEP 2144.05)

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the vent of Walsh with the hydrogen vent of Noda to prevent a build up of hydrogen gas within the enclosure, creating an explosive atmosphere. Combining prior art elements according to known methods to yield predictable results and using known techniques to improve similar devices in the same way are considered obvious to one of ordinary skill in the art (KSR, MPEP 2141 (III)).

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5. Claims 10 & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0118881 (Walsh) in view of US 2002/0114984 (Edlund) and US 5,623,390 (Noda) as applied to claims 1 & 16 respectively and further in view of US Patent 4,168,349 (Buzzelli).

The teachings of Walsh, Edlund and Noda as discussed above are incorporated herein.

Walsh is silent to the vent configured to as a flame barrier.

Buzzelli teaches a hydrogen vent that acts as a flame and explosion barrier (2:55-65). Using a hydrogen vent that also blocks flames increases the safety of the fuel cell system.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the vent of Walsh with the flame barrier vent of Buzzelli to improve the safety of the fuel cell device.

6. Claims 3, 5 & 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0118881 (Walsh) in view of US 2002/0114984 (Edlund) and US 5,623,390 (Noda) as applied to claims 1, 2, 4 & 12 respectively and further in view of US 2002/0160245 (Genc).

The teachings of Walsh, Edlund and Noda as discussed above are incorporated herein.

Walsh is silent to the vent comprising a metal, plastic or cellulose.

Genc teaches a fuel cell system with a cooling loop for the fuel cell. The cooling loop includes a passive gas vent that enables the passage of gas but not liquid (Abstract, Fig. 1, [0007, 0010]). Hydrogen is part of the gas that is present in the cooling system liquid and so the vent is a hydrogen vent. The hydrogen vent is a porous material made of plastic or metal and is located in the wall of the coolant reservoir (Figs. 2-6; [0021-0023]). Using this selectively permeable membrane keeps the fuel cell system safe by allowing the unwanted gas to pass thereby reducing the buildup of explosive gas such as hydrogen, while keeping the wanted coolant liquid.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the vent of Walsh with the selectively permeable membrane taught by Genc to improve the efficiency and safety of the fuel cell system by keeping the wanted substances and allowing the unwanted substances to pass.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0118881 (Walsh) in view of US 2002/0114984 (Edlund), US 5,623,390 (Noda) and US 4,168,349 (Buzzelli) as applied to claim 17 and further in view of US 2002/0160245 (Genc).

The teachings of Walsh, Edlund, Noda and Buzzelli as discussed above are incorporated herein.

The teachings of Walsh, Edlund and Noda as discussed above are incorporated herein.

Walsh is silent to the vent comprising a metal, plastic or cellulose.

Genc teaches a fuel cell system with a cooling loop for the fuel cell. The cooling loop includes a passive gas vent that enables the passage of gas but not liquid (Abstract, Fig. 1, [0007, 0010]). Hydrogen is part of the gas that is present in the cooling system liquid and so the vent is a hydrogen vent. The hydrogen vent is a porous material made of plastic or metal and is located in the wall of the coolant reservoir (Figs. 2-6; [0021-0023]). Using this selectively permeable membrane keeps the fuel cell system safe by allowing the unwanted gas to pass thereby reducing the buildup of explosive gas such as hydrogen, while keeping the wanted coolant liquid.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the vent of Walsh with the selectively permeable membrane taught by Genc to improve the efficiency and safety of the fuel cell system by keeping the wanted substances and allowing the unwanted substances to pass.

Response to Arguments

Applicant's arguments with respect to claims 1-5, 7, 9-18 and 20 have been considered but are moot in view of the new ground(s) of rejection as required by amendment.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH WALKER whose telephone number is (571)272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Keith Walker/
Examiner, Art Unit 1795